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2 A The testimony record is -- I would not
3 consider part of my CV. It's a separate document,
4 being my testimony record.

5 Q Okay. So your CV has been reduced to one
6 page at this point; is that correct?

7 A That's correct.

8 Q Will you give us the -- on this page, will
9 you point to the specific training that you believe is
10 relevant or education that you believe is relevant to
11 your training to perform arc mapping.

12 A Certainly. In addition to my bachelor of
13 science degree in mechanical engineering, my licensing
14 is both a mechanical engineer and an electrical
15 engineer in multiple states.

16 And my work history, which over the last
17 approximately ten years, has almost exclusively
18 involved the investigation of fires and explosions and
19 the examination of electrical systems.

20 Q Where there are electrical systems present,
21 obviously, correct?

22 A Correct.

23 Q I see that you look at other explosion
24 types, such as lithium ion batteries or things of that
25 nature.

8

1 Would there still be arcing in those type

2 of issues?

3 A There certainly could be.

4 Q I guess depending on the location of where
5 the fire takes place?

6 A Yes.

7 Q Okay. When -- tell me about how your
8 training as a mechanical engineer prepared you for arc
9 mapping. What is the relevant educational background
10 there?

11 A Certainly. In the field of mechanical
12 engineering, and specifically in my education, there
13 was a great deal of heat transfer, thermodynamics and
14 materials science that all play into how a fire would
15 affect materials, specifically electrical conductors.

16 Q Where was that training at?

17 A That was at the University of Colorado.

18 Q They have special classes at the University
19 of Colorado that teach about how fire will interact
20 with specific electrical conductors?

21 A They have -- they have classes which I --
22 when I took at part of my education involving heat
23 transfer and thermodynamics and material science,
24 which are all applicable to that.

25 Q But no specific training on how fire

9

1 interacts with electrical conductors at the University
2 of Colorado; is that fair?

3 A Not at the university.

4 Q Okay. Where did you obtain that specific
5 training?

6 A That specific training was through my
7 employment over approximately the last ten years, in
8 forensics.

9 Q When you say forensics, can you explain
10 what that means?

11 A Sure. That would be investigating
12 different failures, fire, explosions, accidents, and
13 explaining that using science and engineering to help
14 explain what happened to my clients.

15 Q Okay. And when we say the last ten years,
16 are we starting that forensic work and this training
17 in 2014?

18 A Correct.

19 Q And again, I don't mean to say that there's
20 not --

21 MR. MORGAN: We can take this down.

22 Q (By Mr. Morgan) I'm not meaning to say
23 that there's not applicable science and that
24 translates between what you're doing here and
25 otherwise.
10

1 But specifically for arc mapping and the
2 forensic, that would have started when you worked at

3 Rimkus?

4 A Correct.

5 Q And when you worked at Rimkus, did you work
6 with Mr. Filas?

7 A I did work with Mr. Filas.

8 Q I apologize for saying his name wrong. How
9 long did you work with Mr. Filas?

10 A Approximately five years.

11 Q Is Mr. Filas the one who specifically
12 trained you in arc mapping?

13 A I certainly received some training from Mr.
14 Filas. I also worked with other engineers at Rimkus.
15 I learned -- I also -- I also learned aspects of arc
16 mapping from both International Association of Arson
17 Investigators Training and National Association of
18 Fire Investigators training class.

19 Q Okay. How many of those training classes
20 did you go to with the IAAI or NAFI?

21 A I've been to several week-long classes and
22 seminars with -- with both organizations. And then a
23 great number of hours of online training.

24 Q Okay. Is your online training represented
25 in this CV?

11

1 A I don't believe it is specifically
2 represented there.

3 Q Okay. Do you know approximately how many

4 hours you spent online learning about arc mapping?

5 A Specifically about arc map, I couldn't say.

6 Q Okay. Is there any specific classes that

7 you took that you would have obtained a certificate

8 regarding arc mapping?

9 A Yes. I obtained certificates for all of

10 the online courses.

11 Q Okay. And do you have those in your

12 possession somewhere?

13 A I do not have them with me today.

14 Q No. I understand. But those are things

15 that you could retrieve if we asked you for online

16 certifications regarding arc mapping, that's something

17 you would be able to find?

18 A Yes.

19 Q Okay. As far as the IAAI arc mapping work,

20 did you receive a certificate for that class?

21 A Yes. I have certificates for all of the

22 fire investigative training courses, both in person

23 and online, that I've attended.

24 Q So when you went to these fire

25 investigative courses, did you -- were they in total

12

1 fire investigation or were they specific to arc

2 mapping?

3 A Most of them would be total fire

23 potential arc sites in Bedroom 4. What I did document
24 with photography and in my notes was the location
25 where the branch circuit conductors ran in the
50

1 bedroom.

2 Q Okay. If we can pull up the report again,
3 Exhibit A, and go do the conclusions, please.

4 MR. CURRAN: Yes, sir. One moment.

5 It's up, sir.

6 MR. MORGAN: Okay.

7 Q (By Mr. Morgan) When we look at Conclusion

8 No. 4, the conclusion reads, The physical evidence

9 presented by the electrical system at the residence

10 was not consistent with a fire originating within the

11 residence.

12 When we talk about the physical evidence

13 presented by the electrical system, are you referring

14 to arcing?

15 A Yes, I'm referring to electrical arcing or

16 the lack therefore.

17 Q Okay. And is it a fair interpretation of

18 this statement that it is not saying conclusively the

19 fire did not originate in the residence. It is simply

20 saying there was no evidence of electrical arcing in

21 Bedroom 4?

22 A Part of what -- part of what Conclusion 4

23 is saying is that there's no evidence of electrical

24 arcing in Bedroom 4, but it goes further than that.

25 The arc mapping, as a whole, provides in
51

1 this case an indication of the fire spread or how the

2 fire progressed through the course of the fire.

3 Q Okay. Explain.

4 A Sure. So with we look at the -- the

5 area -- potential areas of origin defined by the fire

6 investigators involved in thinks matter, so we looked

7 at the Bedroom 4 and we looked at area just outside of

8 Bedroom 4, where a polymer smoking shed was located.

9 If we look at the -- all of the conductors

10 that we looked at, we found no evidence of electrical

11 arcing in the branch circuit conductors in Bedroom 4,

12 we found evidence of electrical arcing on small

13 fragment wells of wires located in what was the

14 polymer shed, whether that was the ends of extension

15 cords or appliance cords plugs into that, we don't

16 know. They were simply fragments. But we have

17 evidence of electrical arcing in the shed.

18 And then we have the severed service

19 triplex provided electrical service to the residence

20 from the -- from the utility company.

21 And so we have -- we have arc -- once --

22 I'll start with the service triplex. The service

23 triplex was composed of aluminum, and it ran

24 approximately right over the polymer shed.

25 The service triplex was melted and severed

52

1 during the fire, which is not uncommon. Again,

2 aluminum has a low enough melting temperature that it

3 is common for eliminate to melt if a fire.

4 Once that service triplex melted and was

5 severed, there would no longer be any electrical

6 service to the residence; there could no longer be any

7 electrical energy in any of the branch circuits in the

8 residence.

9 So having evidence of electrical arcing on

10 cords in the shed, we know that fire was present in

11 the shed or at the shed prior to the time that the

12 service triplex was severed; because again, after the

13 service triplex was severed, we would have no

14 electricity to produce arcing.

15 Then the --

16 Q Okay.

17 A -- the -- once that service triplex was

18 severed, there is no longer -- again, no longer any

19 electrical energy present in any of the branch

20 circuits, so there would be no -- there would be no

21 electrical arcing, there would be no evidence of

22 electrical arcing on any of the circuits after that.

23 Q Okay. We've already discussed that you are

25 arcing in Bedroom 4, that means there was no
54

1 electricity to the home, right? Is that right?

2 A I want to make sure I understand exactly
3 what you're stating there.

4 Yes, once the service triplex melted and
5 severed, there was no more electrical power to the
6 home.

7 Q Right. But what I'm saying is: Because
8 you only arc mapped two places, Bedroom 4 and the
9 shed, you cannot tell anyone that there was not
10 electricity in the home at the time that the service
11 triplex melted, because I don't have any evidence
12 yourself, right?

13 MR. LaFLAMME: Object to form.

14 A So if I understand what you just asked me,
15 you're saying -- you're saying that I cannot determine
16 that there was no electrical power in the home when
17 the service triplex melted. And that is incorrect.

18 Q (By Mr. Morgan) Correct.

19 A When the service triplex melted, there was
20 no longer any electrical energy in the home.

21 Q Okay. That part is true. But whether or
22 not Bedroom 4 was on fire before that, cannot be
23 stated, right?

24 A No, I don't believe -- I don't believe

5 mapping?

6 A I don't -- I don't know that I have a
7 specific example for you.

8 Q Okay.

9 MR. MORGAN: All right. We can take that
10 down.

11 Q (By Mr. Morgan) Let's go back to your
12 conclusions. And we've talked about 2 and we talked
13 about 4. I want to talk about the No. 3.

14 MR. MORGAN: If we can pull that back up.

15 Q (By Mr. Morgan) Okay. No. 3 says -- we'll
16 take it in two parts -- The physical evidence
17 presented by the electrical system at the residence
18 was consistent with, A, fire being present at or
19 within the polymer smoking shed prior to the time that
20 the fire severed the overhead service triplex to the
21 residence.

22 So let's start just with that. The
23 evidence that that is based off is the arcing found on
24 the metal fragments within the shed, correct?

25 A Yes, on the conductor fragments in the
69

1 shed.

2 Q As well as the lack of arcing in Bedroom 4,
3 correct?

4 A Well, when we're speaking specifically
5 about Conclusion 3A, when I say fire being present at

6 or within the polymer showing shed prior to the time
7 that the fire severed the overhead service triplex to
8 the residence, I'm not -- I'm not making that
9 statement based on anything that was or was not found
10 in Bedroom 4.

11 I'm making that statement simply based on
12 the fact that the service triplex was severed and
13 after the fact that that service triplex was severed,
14 there was no longer any electrical energy supplied to
15 the residence.

16 Therefore, any electrical arcing that
17 occurred to those conductors in the shed, which was
18 plugged into extension cords, powered by the
19 residence, for there to be evidence of electrical
20 arcing in the shed, that had to have happened prior to
21 the time that the service triplex was severed.

22 Q Okay. I do -- I believe I understand. But
23 let me ask you a hypothetical: Hypothetically, if we
24 had a fire in Bedroom 4 coming out of the window, did
25 that also cause the aluminum to melt and disconnect
70

1 power from the home?

2 A Any fire present at the service triplex
3 could cause the aluminum to melt and sever the
4 service to the residence.

5 Q Okay. And so going specifically to A:

6 What we are basing the fact that the fire must have
7 come from the shed that we have the presence of arcing
8 on the wire fragments and we do not have the inference
9 of arcing in Bedroom 4?

10 A No. That's not what I'm stating in 3a.

11 What I'm stating --

12 Q Okay. I'm still lost.

13 A I'm sorry. Go ahead.

14 Q Go ahead. No, I'm just having trouble
15 figuring out who other elements are considered there,
16 so I want to -- I'm trying to understand it.

17 A Sure. Sure. Conclusion 3A is very simple:

18 There was evidence of arcing, electrical arcing, on
19 conductor fragments in the shed. That could only
20 occur if there was electrical energy present, if the
21 electrical service to the residence was still intact.

22 The service triplex to the residence, which
23 supplies all of the electrical power to the residence,
24 was severed during the fire. It was melted and
25 severed.

71

1 After the time that that service triplex
2 was severed, there was no longer any electrical energy
3 in the building and there was no possibility of
4 electrical arcing on conductors powers by the
5 building.

6 So all I'm saying in Conclusion 3A is that

7 Q Got with. It got it. Sorry. I was just
8 reading it together.

9 Okay. So then 3B says, The overhead
10 service triplex being severed by the fire prior to the
11 time that the fire attacked the branch circuit wiring
12 within Bedroom 4 of the residence.

13 And is that saying that because there was
14 no arcing within Bedroom 4, that you believe the power
15 must have been cut by that time?

16 A That is correct.

17 Q Got it. Now, are you aware of hypothesis
18 or research relating to arcing on non-energized lines?

19 A I'm not aware -- I'm not aware of any
20 arcing occurring on non-energized lines, because
21 electrical arcing requires that the lines be
22 energized.

23 Q Okay. And then let's go to Conclusion 1.
24 And I'm going to leave out a word just for future
25 motion in limine, but you can talk about whether you
73

1 should come back in later.

2 No. 1: Evidence of electrical arcing was
3 present on conductors located within the polymer shed
4 adjacent to the residence.

5 That conclusion is simply talking about the
6 arcing on the metal fragments that we've seen,
7 correct, or that we've spoken about?

13 Q Okay. And in that process of updating the
14 edition, do you know if NFPA 921 considers various
15 peer reviewed articles that are out there in the
16 marketplace concerning issues of fire investigation?

17 MR. MORGAN: Object to predicated
18 foundation.

19 A Yes. Certainly -- certainly, it does.
20 NFPA 921 is a consensus document that is authored
21 jointly by many individuals in the fire investigation
22 community.

23 Q (By Mr. LaFlamme) And when you say,
24 "consensus document," what do you mean by that?

25 A I mean the NFPA 921 is a guide, and it is
84

1 published by -- it is published by a committee within
2 NFPA. That -- that committee consists of a number of
3 individuals. I don't know how many offhand. But many
4 individuals who all must agree to one degree or
5 another on what is going to be published in that
6 guide.

7 Q And in NFPA 921, is that generally titled
8 The Guide for Fire and Explosion Investigation?

9 A Yes, I believe that's the title. It's
10 considered the standard in the industry as a guide.

11 Q Do you know if NFPA 921 is generally
12 accepted nationally as the guide for fire origin and